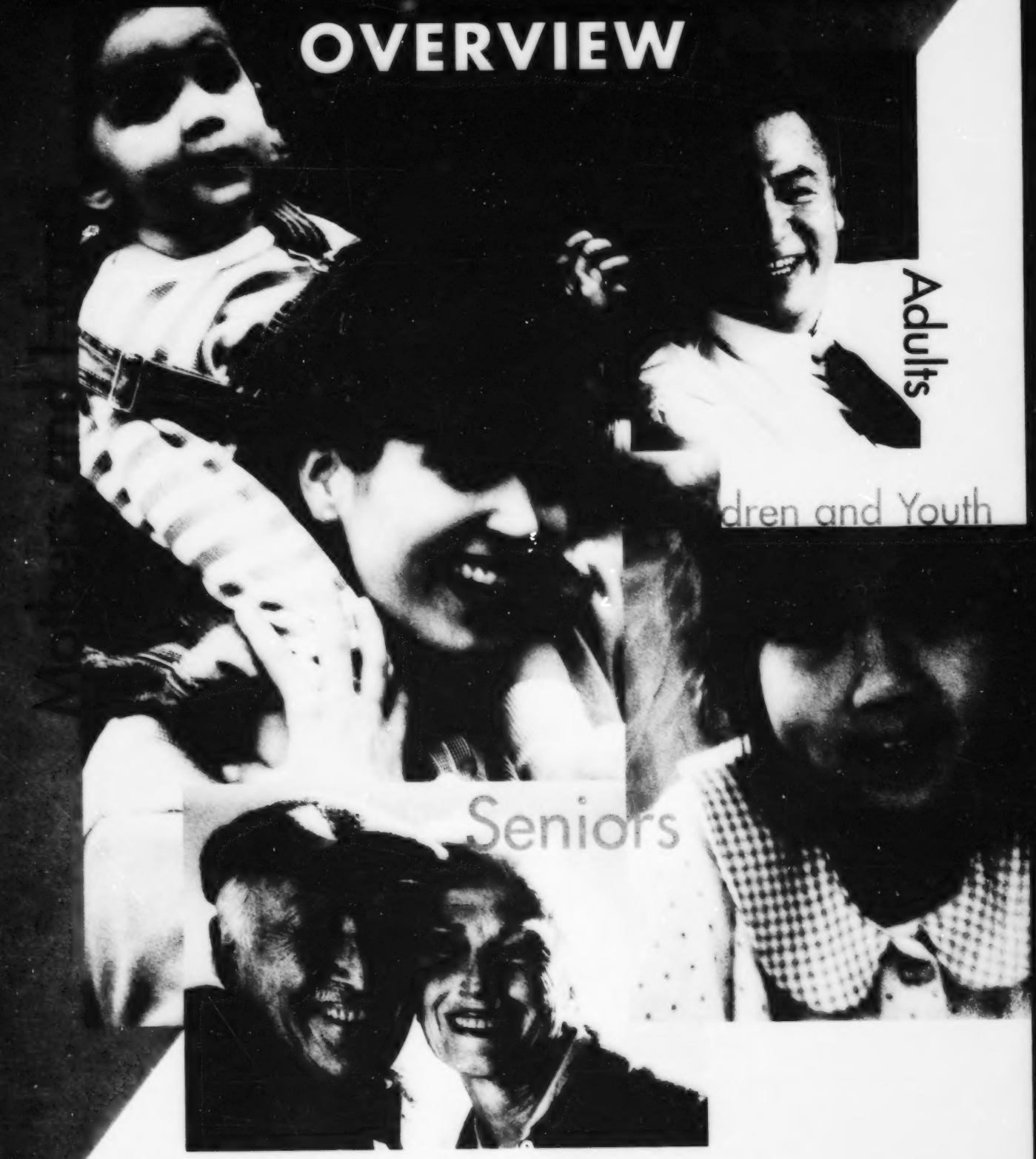
HEALTH SERVICE AND OUTCOME INDICATORS BY POPULATION GROUP

OVERVIEW



Saskatchewan
Health

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FOREWORD

The purpose of this report is to provide readers with an overview of the Health Service and Outcome Indicators project of Saskatchewan Health. The primary objective for this project is to develop province-wide, comparative information for health districts on high-level indicators of health status and health service delivery/utilization. High-level indicators are broad-based measures that can be used to describe critical components of health system functioning. These indicators are designed to assist health districts in the province with their planning, decision-making, and needs assessment processes.

The report begins with a discussion of the Saskatchewan Framework for Health Service and Outcome Indicators and the rationale underlying the development of the Framework. The process that was used to select indicators for the Framework is described. The bulk of the remainder of the report provides details of the specific indicators that are being developed within the context of the Framework for four population groups: mothers and infants, children and youth, adults, and seniors. For each of the indicators that have been proposed for the Framework, the rationale, definition, and proposed data sources are summarized. The report concludes with a discussion of future plans for the Health Service and Outcome Indicators project.

This report is intended to complement other documents that will be used to present in-depth analyses of the indicators selected for the Framework. In March 2000, the first of these reports providing information on the mothers and infants population group was released to health districts and stakeholders. Future reports will focus on each of the remaining three population groups that are represented in the framework.

To order additional copies of this overview report, please contact:

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You also can find a copy of this report on our web site: www.gov.sk.ca/health/

BACKGROUND

In the fall of 1996, the Health District Advisory Committee established the Information Needs Working Group, which consists of representatives from Saskatchewan's health districts, Saskatchewan Health, and the Health Services Utilization and Research Commission. The current membership of the Working Group is provided in Appendix A. The group was charged with the task of developing comprehensive, province-wide comparative information which district health boards can use to support needs assessment and strategic planning, and to guide decisions regarding resource allocation, program development, and program management. While the project is intended to facilitate evidence-based planning and decision-making, it will also assist districts in fulfilling legislated reporting requirements. In particular, health districts are required to report on the health status of their residents and the effectiveness of their programs and services.

The Information Needs Working Group set as one of its initial objectives the development of a concise network of health indicators. There are many definitions that have been applied to the term *indicator*. The Canadian Council on Health Services Accreditation defines an indicator as "a measurement tool, screen or flag which is used as a guide to monitor, assess and improve the quality of client care, clinical support services, and organizational functions that affect client outcomes." The Nova Scotia Department of Health defines indicators as "yardsticks of progress towards the achievement of results."

Indicators can be used to track health system impacts, identify opportunities for improvement, and demonstrate effective performance by:

Providing baseline data upon which to establish planning priorities and operational targets;
Assessing progress towards the achievement of goals and targets;
Flagging areas requiring investigation;
Focussing on quality improvement activities; and
Monitoring effects of implementing change.

THE SASKATCHEWAN FRAMEWORK FOR HEALTH SERVICE AND OUTCOME INDICATORS

The Information Needs Working Group began its work by developing a framework that depicts the various types of health indicators that are useful in monitoring the health system, focuses on the interconnections among these measures, and establishes a context for understanding the applications and uses of indicators. The framework was the foundation of province-wide consultations on the indicator project. These consultations occurred in the fall of 1997 and included health districts, affiliates, and chiefs of staff.

The development of the Saskatchewan Framework for Health Service and Outcome Indicators began with consideration of the concept of *quality*. However, rather than focussing on the re-creation of a definition of *quality*, work centred on the development of a framework which would incorporate the dimensions of quality, doing so within the context of a client-centred health system. This decision was primarily made due to the recognition that:

- the definition of quality is highly dependent upon one's perspective (e.g., client, health care provider, district health board, provincial government); and

- significant work in this area had already been done, particularly by the Quality of Care Committee, which was established in 1994, and included representatives from health care provider and health stakeholder groups.

The definition of quality developed by the Canadian Council on Health Services Accreditation was used to guide development of the Saskatchewan Framework:

Doing the right thing, doing it well, and satisfying the customer.

Components of the Framework

There are three dimensions of quality incorporated in the Saskatchewan Framework. These are described below, along with key questions that arose in the development of the Framework.

❖ Steps to Good Care

Delivering services involves both inputs and processes. *Inputs* refer to both financial and non-financial resources including people and their qualifications, while *processes* refer to the technical and interpersonal aspects of activities or things done to, or for, targeted individuals or groups.

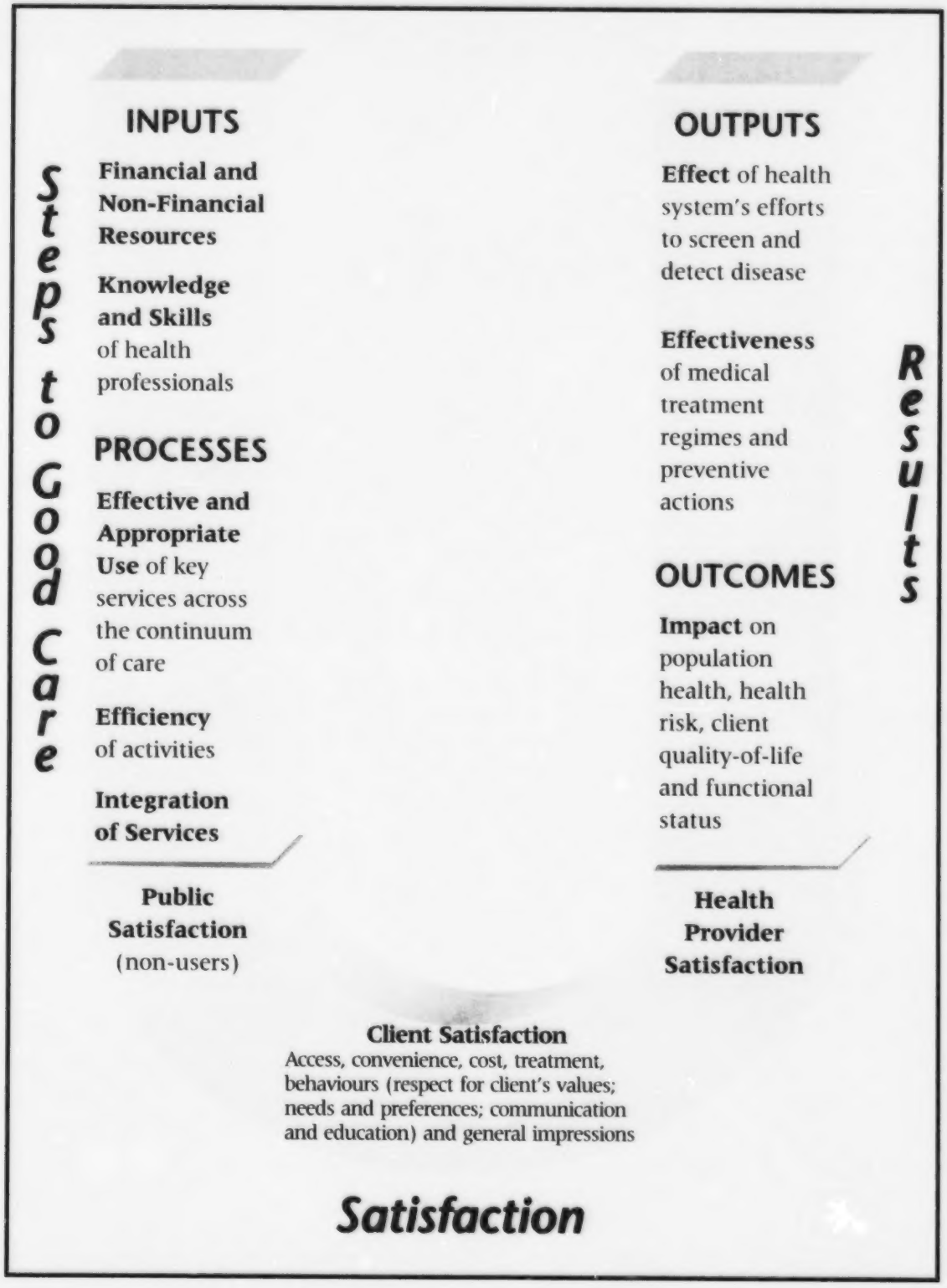
Question: How well is the system delivering needed services across the continuum of care?

❖ Satisfaction

Satisfaction has multiple dimensions, and covers such topics as convenience and accessibility of services. However, satisfaction is also a much broader issue that encompasses the extent to which individuals are empowered to manage and cope with their own illnesses, and to use information in order to lead a healthier life. While an understanding of the satisfaction that clients have with the services that they use is essential, the concept of satisfaction must be viewed from a wider perspective. Health professionals who are happy with the environment in which they work will be more productive; members of the public who do not currently use the system may be more inclined to do so, when needed, if their perceptions of the health system are favourable. As well, current non-users of the system who are satisfied with the health system may feel reassured that the system will be accessible to them in the future.

Question: How satisfied are people with the care and services they receive and with their role in decisions about their health care needs?
Question: How satisfied is the public, including non-users of the health system, with both the care and services that are available and the value received for the money spent?
Question: How satisfied are health providers with the system in which they work?

Components of the Saskatchewan Framework


Steps to Good Care
INPUTS
Financial and Non-Financial Resources
Knowledge and Skills of health professionals
PROCESSES
Effective and Appropriate Use of key services across the continuum of care
Efficiency of activities
Integration of Services
Public Satisfaction (non-users)
OUTPUTS
Effect of health system's efforts to screen and detect disease
Effectiveness of medical treatment regimes and preventive actions
OUTCOMES
Impact on population health, health risk, client quality-of-life and functional status
Health Provider Satisfaction
Results
Client Satisfaction
Access, convenience, cost, treatment, behaviours (respect for client's values; needs and preferences; communication and education) and general impressions
Satisfaction

❖ *Results*

Measuring results involves examining both outputs and outcomes. *Outcomes* reflect the measurable impact of programs and services on the health of a population. *Outputs* include the effect of the health system's efforts to screen and detect disease, effectiveness of medical treatment regimes, and whether the delivery of key services across the continuum of care has been effective and appropriate.

Question: What is the impact on population health status, client needs, client quality-of-life and decisions regarding delivery infrastructure?

Integrating the Framework Dimensions

The Framework is further intended to depict the relationships that exist among the various dimensions of quality. Assessing the demographic characteristics of clients and potential clients is an essential step in planning health system inputs and processes for service delivery. Examining such factors as the age and sex structure of the population, the population growth rate, age-specific fertility rates, school enrolment and selected socio-economic indicators can assist in building a profile of both current and future clients. Client characteristics are an important tool in the process of assessing need.

In order to define health needs, it is essential to recognize that health services are just one of many factors that contribute to the health, well being, and quality of life for people and communities. No single factor, including health services, is responsible for the health of individuals or populations; rather, health is the result of the interaction of many contributing factors. The quality of air and water, the interaction of behaviour and genetics, and the conditions where people live, work, and play are all important. In addition, health is greatly influenced by social supports, which include family, friends, and communities. The type of influence or control that the health system can exercise with respect to these factors depends upon the level of responsibility attributed to the health system. There are three main categories:

Action: the health system has sole responsibility;
Action/Voice: the health system shares responsibility with others in the community; and
Voice: responsibility rests exclusively with others in the community.

The varying levels of responsibility of health districts for the health of a population are illustrated in the following examples.

Example #1:

The number of infant deaths which occur each year is influenced by a number of factors, including maternal nutrition during pregnancy, birth weight, the environment in which the infant is raised, substance use, and adequacy of prenatal care. There are a number of relationships among these factors as well. For example, women who receive a full series of prenatal visits are at lower risk for having a low birthweight baby than women who receive no prenatal care. Low birth weight, which has several causes, is the principle risk factor associated with infant mortality.

While the health system may be able to influence some of the factors that have an impact on infant mortality, some are clearly outside the direct responsibility of the health system. For example, the health system has little opportunity for directly influencing the quality of housing available to district residents. At the same time, a safe home environment is important in the prevention of unintentional injuries that may lead to infant death. In this instance, intersectoral collaboration and community participation are essential for achieving real improvements in health.

Example #2:

The rate of immunization for specific communicable diseases is almost entirely within the control of the health services system because it has responsibility for both the purchase and distribution of vaccines. Any change in the rate of vaccine-preventable disease can be very strongly influenced by the delivery of immunization services.

Finally, the Framework is intended to demonstrate the impact that good care can have on other dimensions of the Framework. Changes in the delivery of programs and services, which are based on assessment of client needs, should have an impact on one's level of satisfaction with the system. As well, modifications in the structure of the health system and the manner in which services are delivered is expected to have an impact on the results that are achieved. And because these are important elements of program planning and decision making, this may ultimately lead to changes in the programs and services delivered. Hence a circular process is depicted, in which assessment of client needs has the opportunity to influence programs and services, which in turn impacts on population outcomes and satisfaction with the system, which ultimately serves as a vehicle for refinement and further change.

Framework Focus

In the Saskatchewan Framework, a client/patient focus, differentiated by population group, has been adopted. The four population groups are:

- Mothers and Infants,
- Children and Youth,
- Adults, and
- Seniors.

A number of alternatives such as program, disease, and function grouping were considered; however, a client/patient focus was selected for two key reasons. The most important reason, perhaps, is that health care services are inherently client focussed in nature. The second reason is the new accountability relationships which resulted from the reorganization and restructuring of the province's health system which was initiated in August 1992.[1]

[1] As noted in *A Framework of Accountability, The Minister of Health and District Health Boards* (October, 1995), "district health boards are now accountable for the overall health of their district's residents - a responsibility never before included in a government board's mandate. Specifically, the district boards have responsibility and authority for:

- assessing needs of persons to whom they provide services;
- planning, managing, delivering and integrating the provision of health services;
- promoting health and wellness; and
- cooperating with and/or entering into agreements with the Governments of Canada or Saskatchewan, district health boards, Indian bands, the Metis Nation of Saskatchewan, or any other person or group for the provision of health services."

Integrating the Framework Dimensions

Steps to Good Care
INPUTS
NEED as determined by *demographics*, *health determinants* and *health status*. Needs assessment is used to identify factors which contribute to variability in client outcomes, as well as risk factors, such as age, sex, and co-existing conditions.
OUTPUTS
Results
PROCESSES
RELATIONSHIP
OUTCOMES
Public Satisfaction (non-users)
Health Provider Satisfaction
Client Satisfaction
Satisfaction

Within the context of the Framework, a distinction has also been made between core and optional indicators. Core indicators are those measures for which all health districts will either collect information, or have access to information, in order to establish comparability and standardization of results across the province. Inter-provincial comparability of results may also be a future goal. Core indicators are those measures on which it is essential to collect and report information at the district level. Initially, work within the indicators project will focus on the development of core indicators. Optional indicators, which will provide ancillary information for planning and decision-making purposes, will be developed in the future.

The core set of indicators for each population group defined in the Framework is comprised of a maximum of eight measures. The size of the core set has been limited, primarily because increasing the number of indicators can create confusion in the understanding and interpretation of information. Too many indicators make it difficult to identify or define the most significant issues facing a segment of the population.

THE PROCESS FOR SELECTION OF INDICATORS

Beginning in the spring of 1998, Saskatchewan Health chaired a series of committees, known as Task Teams, which were given the responsibility of recommending indicators for each of the population groups identified in the Saskatchewan Framework. These committees focussed their efforts on the development of recommendations concerning core and optional indicators for the *Steps to Good Care* and *Results* dimensions of the Framework. The Task Teams were comprised of representatives from the health districts, Saskatchewan Health, and various other government and non-government agencies. Each Task Team reported its recommendations to the Information Needs Working Group.

Task Teams had the following general objectives:

- Recommend a set of core indicators for implementation by all health districts;
- Identify a menu of optional indicators that health districts may find useful in assessing delivery/utilization of services and health status;
- Identify issues related to the definition and measurement of the proposed indicators.

The Mothers and Infants Task Team focussed on children under one year of age as well issues related to maternal health. The Children and Youth Task Team focussed on the population between 1 and 19 years of age. The Adult Task Team addressed health indicators for the population between 20 and 64 years of age, while the Senior's Task Team developed health indicators for the population 65 years of age and older.

The Mothers and Infants Task Team was the first group organized by Saskatchewan Health. Members of this group developed a series of guiding principles concerning recommendations on health indicators, which were also used by each of the subsequent Task Teams. These guiding principles were:

- Core indicators should be regarded as the minimum set of information required by health districts to conduct needs assessments, plan programs, monitor changes over time in program effectiveness and health status, and enable inter-district and intra-district comparisons.

- It is hoped that core indicator results for all health districts will be made available in a roll-up report.

- The indicators that comprise the core set may change over time in response to changes in the major issues facing a population group.

- Core indicators should not be prescriptions for program delivery by the health districts.

- Health districts will require support in implementing health indicators. For example, Saskatchewan Health will need to play a major role in the aggregation and analysis of data for certain indicators, such as those involving data from the physician billing claims and hospital separations databases.

- Core indicator results should be subjected to an in-depth analysis, as a single, composite number will not likely provide meaningful information to a health district. It will be important to disaggregate the data for select groups within the larger population for whom results may show substantial variability. As well, consideration will need to be given to the factors that contribute to a particular result.

- Health districts will require a detailed resource package to assist in the collection, analysis, and interpretation of health indicator results. This will aid in the transfer of skills and knowledge to the health districts, and will also help to ensure consistency and comparability of information.

With these last two principles in mind, a format for describing indicator results and for communicating information about the technical details of each indicator was developed. The elements of this format are described in Appendix B.

The Information Needs Working Group also developed the following criteria as screens for indicator selection:

Usefulness

✓ Does it represent an important contribution to the health of the population group in question? Or, does it represent an important health issue or problem? Factors considered in this regard include the number of people affected, impact on future health status, and severity of impact.
✓ Can something be done to improve care/outcome?
✓ Is there an existing or potential impact on district health board resources, including both financial and non-financial impacts (indication of linkage with district health board goals and role)?

Feasibility

✓ Are data available? If not, consideration is given to the feasibility and cost of collecting the data.
✓ Are the available data of acceptable quality and/or quantity?

Validity and Reliability

- ✓ Are the data capable of being used at different levels of aggregation? Are the data, for example, meaningful at a district level?
- ✓ Does the indicator measure what it purports to measure? Is it easily understood?
- ✓ Is there potential for error (i.e. false negatives, which occur when the measure fails to identify deficiencies that actually exist, or false positives, which occur when the measure identifies deficiencies that do not exist)?
- ✓ Is the indicator reliable (i.e. ability to identify the same result after repeated measures, or when different individuals take the same measurement)?

Overall Screening

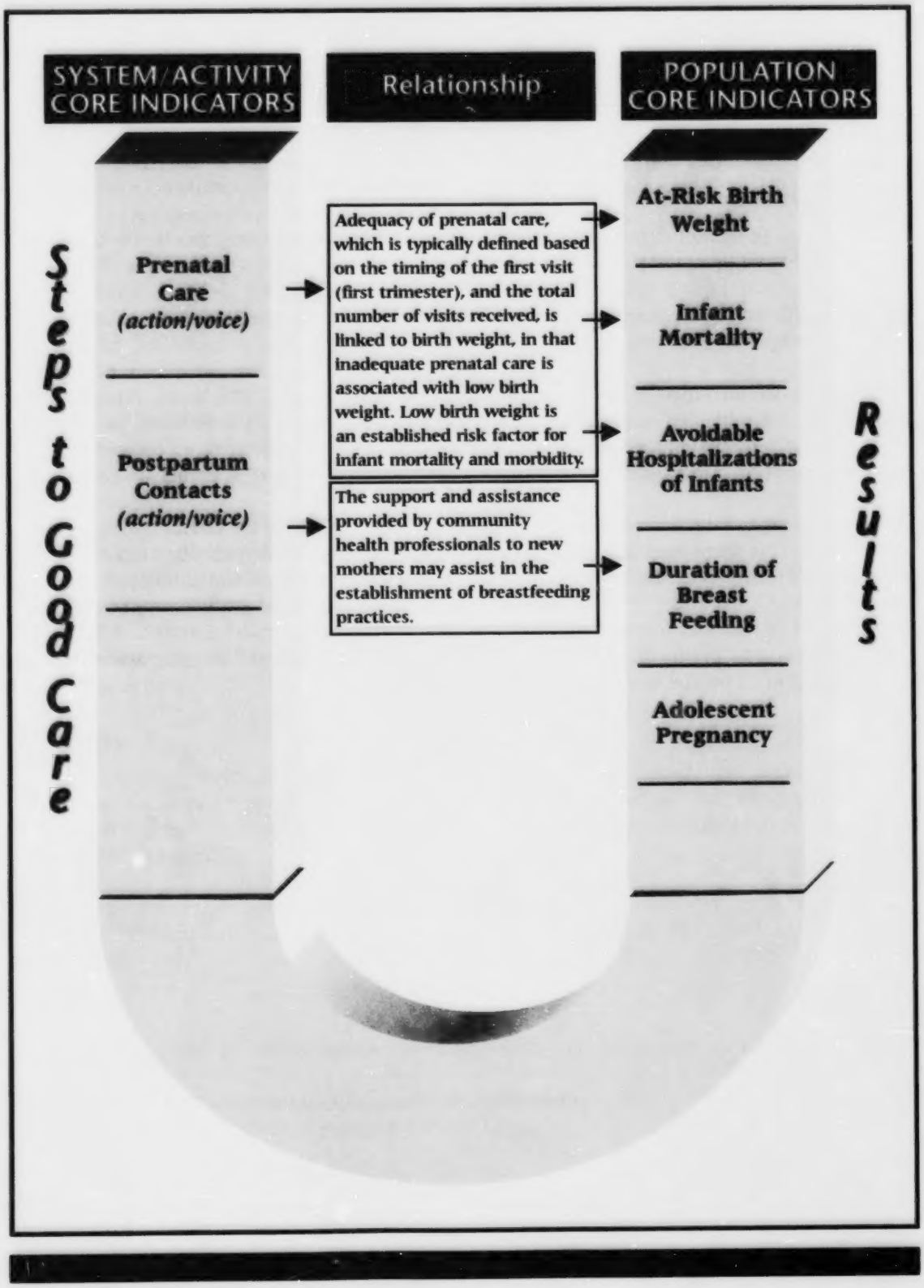
Finally, the usefulness of a *set* of indicators for a specific population group can be assessed against the following criteria:

- ✓ Do the indicators span the continuum of care, thereby representing the full spectrum of health services?

Each Task Team concluded its work in approximately a three-month time frame. A nominal group process was adopted as a model for eliciting feedback from each Task Team; face-to-face discussions among participants were used to achieve consensus concerning recommendations on core and optional indicators. Each group consisted of nine to twelve individuals.

The discussions in which Task Team members engaged were useful for clarifying issues related to the measurement of health status and health service delivery/utilization and for drawing attention to key health issues facing a particular segment of the population. The experience and knowledge of Task Team members assisted in the identification of existing regional and provincial programs and services that address these health issues and that provide an opportunity for the collection of indicator data, as well as focussing attention on new opportunities for the development of data sources.

Mothers and Infants
FRAMEWORK OVERVIEW


SYSTEM/ACTIVITY CORE INDICATORS
Relationship
POPULATION CORE INDICATORS
Steps to Good Care
Prenatal Care (action/voice)
Postpartum Contacts (action/voice)
Adequacy of prenatal care, which is typically defined based on the timing of the first visit (first trimester), and the total number of visits received, is linked to birth weight, in that inadequate prenatal care is associated with low birth weight. Low birth weight is an established risk factor for infant mortality and morbidity.
The support and assistance provided by community health professionals to new mothers may assist in the establishment of breastfeeding practices.
At-Risk Birth Weight
Infant Mortality
Avoidable Hospitalizations of Infants
Duration of Breast Feeding
Adolescent Pregnancy
Results

Core Indicators

Prenatal Care

Definition: Percentage of women giving birth to live, singleton infants who are identified as receiving adequate prenatal care. Adequate prenatal care is defined using the Kessner Index of prenatal care adequacy (US Institute of Medicine), which is based on the number and timing of visits to a physician in the gestation period. Adequate care must begin in the first trimester of pregnancy and must follow a prescribed number of minimum visits. Inadequate care is prenatal care that does not begin until after the sixth month of the pregnancy.

Data Source: Billing claims for prenatal care outpatient services and treatments, including diagnostic tests performed in a physician's office or laboratory.

Rationale: Adequacy of prenatal care utilization provides an indication of the number of women who may experience less than optimal birth outcomes. As well, it provides an indication of the number of women who may experience difficulty in accessing prenatal care providers.

Avoidable Hospitalizations of Infants

Definition: Number of hospitalizations for ambulatory care sensitive (ACS) conditions for infants under one year of age, expressed as a rate per 1,000 infants. ACS conditions are diagnoses for which timely and effective primary care can help to reduce the risks of hospitalization by: (1) preventing the onset of an illness or condition, (2) controlling an acute episodic illness or condition, or (3) managing a chronic disease or condition. Diagnoses that are classified as ACS conditions for infants under one year of age include such conditions as immunization-related and preventable conditions, severe ear, nose, and throat infections, bacterial pneumonia, asthma, cellulitis, and kidney/urinary infections.

Data Source: Hospital separation records for infants under one year of age at the time of admission to hospital. ACS conditions are identified on the basis of the primary and secondary diagnoses recorded on hospital separation forms. Covered population records maintained by the provincial ministry of health. The covered population is based on eligibility for health insurance benefits in Saskatchewan.

Rationale: Hospitalization rates for ACS conditions provide an indication of the availability, accessibility, and use of primary care by different segments of the infant population.

Adolescent Pregnancy

Definition: Number of pregnancies among females 10 to 19 years of age expressed as a rate per 1,000 females 10 to 19 years of age. The number of adolescent pregnancies is calculated based on the following events: live births, induced abortions occurring in hospitals, and fetal losses. Fetal losses include still births, spontaneous abortions (miscarriages) requiring hospitalization, and abortions for which the cause is not specified but which require hospitalization.

Data Source: Live birth and still birth registrations maintained by the provincial vital statistics registry; records are compiled for individuals who are between 10 and 19 years of age at the time of birth.
Hospital separation records for individuals between 10 and 19 years of age at the time of admission to hospital.
Covered population records maintained by the provincial ministry of health. The covered population is based on eligibility for health insurance benefits in Saskatchewan.

Rationale: The adolescent pregnancy rate is an indirect measure of the number of female adolescents who are likely to experience difficult living conditions due to early motherhood. It also serves as a proxy measure of the degree of sexual activity in the adolescent population.

Infant Mortality

Definition: Number of deaths of infants under one year of age, expressed as a rate per 1,000 live births.

Data Source: Death registrations for individuals under one year of age at the time of death; these are maintained by the provincial vital statistics registry.
Live birth registrations maintained by the provincial vital statistics registry.

Rationale: The infant mortality rate is a commonly used measure of the overall health status of a population. It reflects not only the nature and quality of health care available to individuals, but also general social and economic conditions.

At-Risk Birth Weight

Definition: Percentage of live births with a recorded birth weight of less than 2,500 grams or more than 4,000 grams.

Data Source: Live birth registrations maintained by the provincial vital statistics registry.

Rationale: Birth weight is an important measure of health status. Low birth weight is considered by the World Health Organization to be an essential indicator in monitoring overall progress toward attaining a better state of health. Less attention is typically given to the rate of high birth weight (macrosomia), despite the fact that this has become a significant issue for the Aboriginal population. Research evidence suggests that macrosomia is on the increase within the Canadian Aboriginal population; the principle risk factors for this condition are diabetes and obesity.

Duration of Breastfeeding*

Definition: (A) Percentage of infants who are breastfed at two months postpartum and at six months postpartum.
(B) Percentage of infants who are exclusively breastfed at two months postpartum.

Data Source: A data source for this indicator will be developed in the future.

***Note**: An asterisk (*) denotes an indicator that is currently under development.*

Rationale: Breastfeeding provides benefits to both the mother and child. It provides optimal nutrition for the infant, encourages infant development, may help to reduce maternal postpartum bleeding, and may be associated with a reduced risk of maternal ovarian cancer. Both national and international organizations and health agencies recommend that exclusive breastfeeding occur for at least the first four months of life, and that breastfeeding continue past the end of the first year. Exclusive breastfeeding, in which no supplemental forms of nutrition are provided to the infant, provides the maximum benefits.

Postpartum Contacts*

Definition: Percentage of mothers having initial contact with a community health professional within two weeks of hospital discharge or delivery. Postpartum contacts may include home visits, clinic visits, group sessions, or telephone calls.

Data Source: A data source for this indicator will be developed in the future.

Rationale: Postpartum contacts provide an indication of service delivery to a population at a crucial stage in the life cycle. Postpartum contacts may also provide an indication of the resources directed toward maternal and infant health.

Optional Indicators

Perinatal Mortality

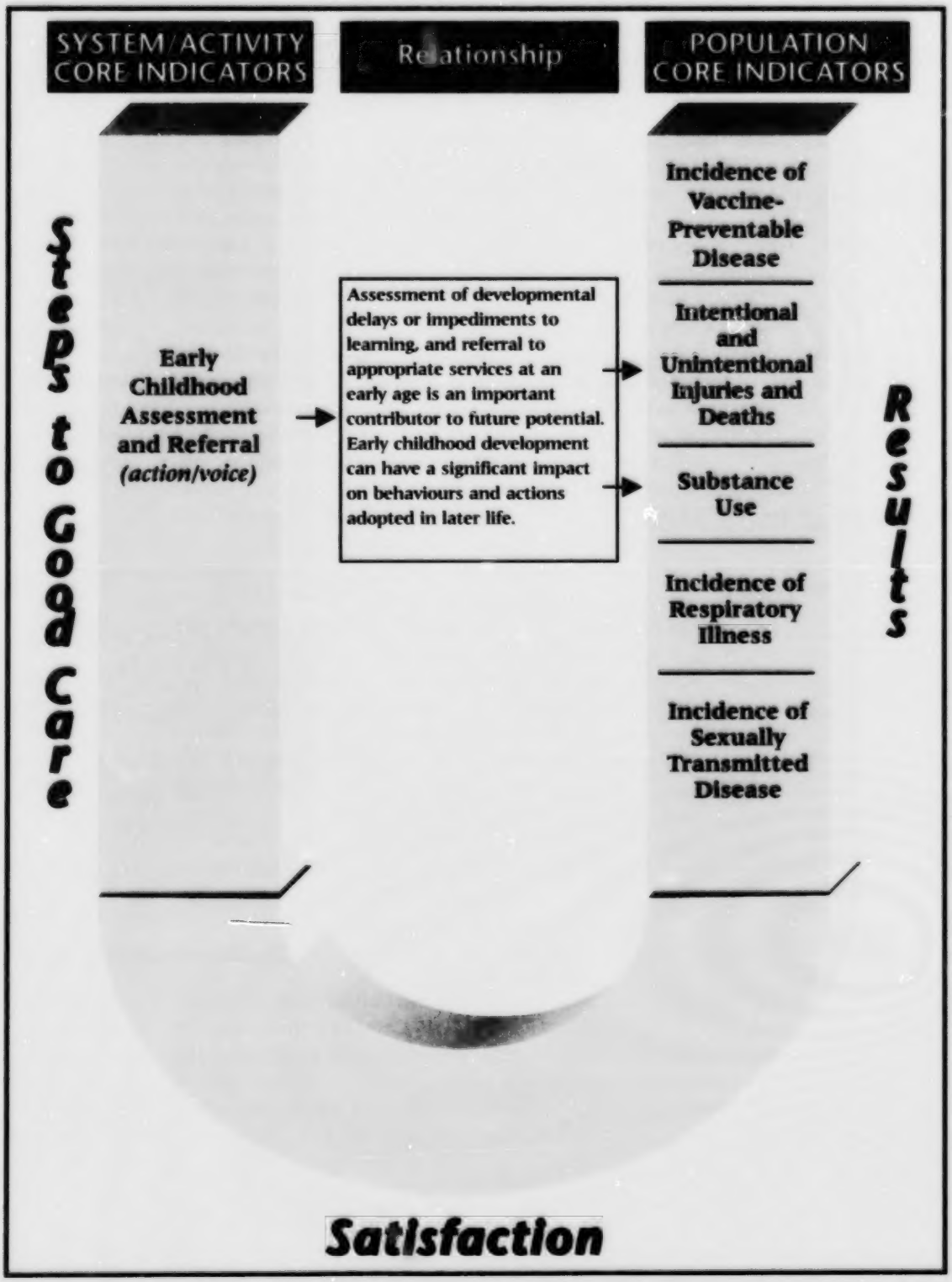
Definition: Number of stillbirths and early neonatal deaths, expressed as a rate per 1,000 total births (stillbirths and live births). An early neonatal death is a death of a live-born infant which occurs within the first seven days of life.

Data Source: Live birth and stillbirth registrations maintained by the provincial vital statistics registry.

Rationale: The perinatal mortality rate can be used to assess the availability and effectiveness of obstetric and neonatal services. Perinatal mortality reflects a combination of fetal and early neonatal mortality; both types of deaths often have similar causes.

***Note**: An asterisk (*) denotes an indicator that is currently under development.*

Children and Youth
FRAMEWORK OVERVIEW


SYSTEM/ACTIVITY CORE INDICATORS
Relationship
POPULATION CORE INDICATORS
Steps to Good Care
Early Childhood Assessment and Referral (action/voice)
Assessment of developmental delays or impediments to learning, and referral to appropriate services at an early age is an important contributor to future potential. Early childhood development can have a significant impact on behaviours and actions adopted in later life.
Incidence of Vaccine-Preventable Disease
Intentional and Unintentional Injuries and Deaths
Substance Use
Incidence of Respiratory Illness
Incidence of Sexually Transmitted Disease
Results
Satisfaction

Core Indicators

Incidence of Vaccine-Preventable Disease

Definition: The number of new cases of each of the following diseases, expressed as a rate per 100,000 for individuals 1 to 19 years of age: measles, mumps, rubella, haemophilus influenzae type B infections, pertussis, Hepatitis A, and Hepatitis B.

Data Source: Communicable disease records compiled by the provincial ministry of health. All cases of these communicable diseases are reportable to the ministry by health districts under the *Public Health Act*.
Covered population records maintained by the provincial ministry of health. The covered population is based on eligibility for health insurance benefits in Saskatchewan.

Rationale: Vaccines have resulted in a large reduction in the number of people who contract a vaccine-preventable disease. However, the viruses and bacteria that cause vaccine-preventable illness and death have not disappeared. This indicator can be used, in part, to monitor the effectiveness of immunization programs. As well, it is useful for monitoring and responding to outbreaks of vaccine-preventable disease.

Intentional and Unintentional Injuries and Deaths

Definition: (A) Number of hospitalizations for intentional and unintentional injuries among individuals 1 to 19 years of age, expressed as a rate per 1,000 individuals 1 to 19 years of age. (B) Number of deaths among individuals 1 to 19 years of age which are attributed to intentional and unintentional injuries, expressed as a rate per 1,000 individuals 1 to 19 years of age. Injury hospitalizations and injury deaths are identified on the basis of the E-code indicated on a hospital separation record, or on a death certificate. The E-code, which is defined using the International Classification of Disease, 9th revision (ICD-9), provides information concerning the external cause of an injury. The E-code provides the most basic information necessary to classify injury hospitalizations and deaths according to their major causes.
Groupings of E-codes were created using a classification system developed by the National Center for Injury Prevention and Control, United States Centers for Disease Control and Prevention. Using this framework, injuries can be grouped by E-code along two dimensions: (1) mechanism or cause of injury (e.g. falls, fires/burns, firearms, etc.), and (2) intent or manner of injury (e.g. unintentional, intentionally self-inflicted, assault or intentionally inflicted by another, intent undetermined and other). The latter category of intent includes injuries occurring as a result of legal interventions, war operations, and effects of medical treatments or drugs.

Data Source: Hospital separation records for individuals who are between 1 to 19 years of age at the time of admission to hospital.
Death registrations for individuals 1 to 19 years of age at the time of death; these are maintained by the provincial vital statistics registry.
Covered population records maintained by the provincial ministry of health. The covered population is based on eligibility for health insurance benefits in Saskatchewan.

Rationale: The occurrence of intentional and unintentional injuries and deaths among children and youth provides a measure of the nature and importance of external risks to children's health, and of risk-taking behaviour, especially among youth. This indicator also provides information on characteristics of the physical environments in which children and youth live and play. It can be used, in part, to assess the effectiveness of a broad range of injury prevention strategies.

Early Childhood Assessment and Referral*

Definition: A definition for this indicator will be confirmed in the future. One proposed definition is the proportion of children who undergo developmental screening by age four and are referred to either a speech-language pathologist or early childhood psychologist for further testing.

Data Source: A data source for this indicator will be developed in the future. Data on screenings and referrals may be available through child health conferences conducted by community health professionals throughout the province. However, not all health districts may utilize the same protocol for developmental screening, which may make comparisons of information difficult.

Rationale: Early childhood assessment is used to detect hearing, speech, and vision problems in pre-school children. Assessment and referral may help to reduce the effects of impairments on child development and, subsequently, school readiness.

Substance Use

Definition: Age of first use, intensity and frequency of use for each of the following substances: tobacco, alcohol, and illegal drugs. This definition may be expanded to include prescription drugs and solvents.

Data Source: Currently, a number of health districts have conducted surveys of children and youth to obtain a better understanding of the nature and scope of substance use. Opportunities may exist for the development of a standardized, comparative survey instrument that may be implemented on a regional basis.

Rationale: Substance use among youth provides an indication of the degree of risk-taking behaviour exhibited by this population group. It also has implications for future health status. Alcohol use has implications for deaths and injuries due to unintentional causes.

Incidence of Respiratory Illness

Definition: Number of hospitalizations for respiratory illness among individuals 1 to 19 years of age, expressed as a rate per 1,000 individuals 1 to 19 years of age. The respiratory conditions that are captured in this indicator include: pneumonia, influenza, croup, tonsilitis, bronchitis, bronchiolitis, asthma, and selected other upper and lower respiratory tract infections.

Data Source: Hospital separation records for individuals who are between 1 to 19 years of age at the time of admission to hospital. Respiratory conditions are

Note: An asterisk (*) denotes an indicator that is currently under development.

identified on the basis of the primary diagnosis provided on hospital separation forms.
Covered population records maintained by the provincial ministry of health. The covered population is based on eligibility for health insurance benefits in Saskatchewan.

Rationale: Hospitalization rates for acute and chronic respiratory conditions provide an indication of both the relative prevalence of these conditions in the children and youth population, and the relative impact that respiratory illness has on various segments of this population.

Incidence of Sexually Transmitted Disease

Definition: Number of new cases of each of the following diseases for individuals between 10 and 19 years of age, expressed as a rate per 100,000 individuals 10 to 19 years of age: chlamydia, gonorrhea, syphilis.

Data Source: Communicable disease records compiled by the provincial ministry of health. All cases of these communicable diseases are reportable to the ministry by the provincial laboratory.
Covered population records maintained by the provincial ministry of health. The covered population is based on eligibility for health insurance benefits in Saskatchewan.

Rationale: This indicator serves as a measure of health status and of risk-taking behaviour among youth. It serves as an indirect measure of access to sexual health education, timely and appropriate provision of treatment, rapid public health intervention, and to birth control methods that can protect against sexually transmitted disease. This indicator is also a marker for child sexual abuse and potential HIV infection.

Optional Indicators

Child Abuse and Neglect*

Definition: A definition for this indicator will be developed in the future. Possible definitions include the number (or rate) and type of investigated cases of physical, emotional, and/or sexual abuse, or physical neglect for children under 16 years of age.

Data Source: A data source for this indicator will be developed in the future. Some data are maintained by the provincial ministry of social services; this data may not always be appropriate for regional comparisons due to variations in reporting mechanisms. A national study funded by Health Canada, the *Canadian Incidence Study on Report Child Abuse and Neglect*, is being conducted to assist in the development of reliable estimates of the scope and characteristics of reported child abuse and neglect across Canada.

Rationale: Children require a safe and nurturing environment for optimal physical, emotional, and social development. Information on child welfare can be used to monitor the provision of services, the outcomes of service delivery (e.g., recurrences of maltreatment; major or minor physical injury), and the opportunities that may exist for collaborative action among child protection workers and health professionals.

Note: An asterisk (*) denotes an indicator that is currently under development.

Immunization Rates for Two-Year-Olds

Definition: Proportion of two-year-olds who have received the following series of vaccinations: DPT (4 doses), Polio (4 doses), Hib (4 doses), MMR (1 dose), MR (1 dose).

Data Source: Data are currently maintained by individual health districts in Saskatchewan. In the future, comprehensive, provincial data will be available from surveillance records maintained by the ministry of health via an Internet-based data collection system.

Rationale: Routine childhood immunization is a highly effective tool in preventing the spread of communicable diseases.

Readiness to Learn*

Definition: A definition for this indicator will be developed in the future.

Data Source: There is no current source that can provide information on readiness to learn at a regional level for the entire province. The National Longitudinal Survey of Children and Youth covers some of the areas relevant to measuring "readiness" concepts. Human Resource Development Canada, through their Applied Research Branch, is examining the potential for community-based monitoring of readiness to learn in selected sites across Canada.

Rationale: Children's early experiences and developmental progress can be powerful predictors of future health and wellbeing. Readiness to learn is a broad concept that encompasses physical, social, and emotional development, and the impact of family and community environment on development. Readiness to learn is generally viewed as a summary concept, which encompasses childhood development in the first five years of life.

Children's Oral Health Status*

Definition: A definition for this indicator will be developed in the future. One potential definition is the DMFT index for children who are 12 years of age (Grade 6). The DMFT index represents the average number of decayed, missing (due to caries), and filled permanent teeth among a group of individuals. The WHO goal for the year 2000 is to achieve a DMFT index of less than 3 for all countries.

Data Source: A data source for this indicator will be developed in the future. Dental health educators, through a dental screening program, currently collect data on oral health of children across the province. These data are presently obtained for children in kindergarten, grade 1, and grade 6.

Rationale: Oral health is a component of children's general health and well being. Poor oral health has both social and economic costs, including decreased self-esteem, school absences, and in later life, lost workdays due to disease. The World Health Organization (WHO) endorses oral health care as an integral component of primary health care, and has developed global indicators of oral health status.

Note: An asterisk (*) denotes an indicator that is currently under development.

Adults
FRAMEWORK OVERVIEW

SYSTEM/ACTIVITY CORE INDICATORS	Relationship	POPULATION CORE INDICATORS
***Note:** *Indicators for this component of the framework will be developed in future phases of the project.*		**Prevalence of Select Chronic Diseases** **Mental Health Status** **Prevalence of Health Risk Behaviours** **Potential Years of Life Lost** **Unintentional and Intentional Injuries**

Steps to Good Care — ***Results***

Satisfaction

Core Indicators

Prevalence of Select Chronic Diseases

Definition: Percentage of individuals ages 20 to 64 years who suffer from chronic diseases such as diabetes, ischemic (coronary) heart disease, cerebrovascular disease (stroke), and respiratory disease (asthma, chronic obstructive pulmonary disease).

Data Source: Possible sources of information include provincial health system administrative data bases (e.g., hospital separations) and the provincial health status survey, known as the Saskatchewan Population Health Status and Dynamics Survey.

Rationale: Chronic diseases include illnesses that tend to be prolonged, do not resolve spontaneously, and are rarely cured completely. Chronic diseases place a heavy burden on society in terms of suffering, death, and increased health care costs. Monitoring this indicator may provide an indication of the need for education/awareness about potential risk factors and preventive measures.

Potential Years of Life Lost (PYLL)

Definition: Total number of years of life lost for individuals 20 to 64 years of age who have died in a given year, expressed as rate per 1,000 individuals 20 to 64 years of age. Potential years of life lost are calculated for each deceased individual using the difference between age at death and 75 years of age.

Data Source: PYLL data can be derived from information contained on death registrations maintained by the provincial vital statistics registry.
Covered population records maintained by the provincial ministry of health. The covered population is based on eligibility for health insurance benefits in Saskatchewan.

Rationale: This measure provides an indication of the major causes of premature death. At present, the most important causes of premature death include cancer, unintentional injuries, heart disease, and suicide.

Mental Health Status

Definition: Prevalence of stress and depression among individuals 20 to 64 years of age.

Data Source: Data on stress and depression among adults will be available from the Saskatchewan Population Health Status and Dynamics Survey.

Rationale: Mental health status is an important component of overall health status, and is closely linked to physical health status. Mental illness is disabling and has a significant impact on quality of life. Mental health reflects not just an absence of illness or suffering, but the capacity to respond and adapt to life challenges. The measurement of such personal traits as depression, anxiety, behavioural/emotional control, and work stress can be used to assess mental health status.

Prevalence of Health Risk Behaviours

Definition: Percentage of individuals 20 to 64 years of age who are current smokers, and/or have a high rate of alcohol consumption, and/or are physically inactive.

Data Source: Data on health risk behaviours will be available from the Saskatchewan Population Health Status and Dynamics Survey.

Rationale: The personal choices that individuals make each day can have a significant impact on their health. Personal behaviours such as smoking, excessive alcohol consumption, or lack of physical activity are risk factors for morbidity and premature mortality. For health promotion efforts to be successful, health professionals need to be aware of the extent to which individuals are engaging in risky behaviours and which segments of a population are most at risk.

Intentional and Unintentional Injuries

Definition: Number of injury hospitalizations for individuals 20 to 64 years of age, expressed as a rate per 1,000 individuals 20 to 64 years of age. Injury hospitalizations are identified on the basis of the E-code indicated on a hospital separation record. The E-code, which is defined using the International Classification of Disease, 9th revision (ICD-9), provides information concerning the external cause of an injury. The E-code provides the most basic information necessary to classify injury hospitalizations and deaths according to their major causes. Groupings of E-codes were created using a classification system developed by the National Center for Injury Prevention and Control, United States Centers for Disease Control and Prevention. Using this framework, injuries can be grouped by E-code along two dimensions: (1) mechanism or cause of injury (e.g. falls, fires/burns, firearms, etc.), and (2) intent or manner of injury (e.g. unintentional, intentionally self-inflicted, assault or intentionally inflicted by another, intent undetermined and other). The latter category of intent includes injuries occurring as a result of legal interventions, war operations, and effects of medical treatments or drugs.

Data Source: Hospital separations records for individuals who are between 20 and 64 years of age at the time of admission to hospital.
Covered population records maintained by the provincial ministry of health. The covered population is based on eligibility for health insurance benefits in Saskatchewan.

Rationale: Injuries are largely preventable and are associated with significant health care costs for the adult population. Some of the more common injuries include motor vehicle accidents, suicide attempts, and farm accidents.

Optional Indicators

Avoidable Hospitalizations of Adults

Definition: Number of hospital separations for ambulatory care sensitive (ACS) conditions for individuals 20 to 64 years of age, expressed as a rate per 1,000 individuals 20 to 64 years of age. ACS conditions are defined as diagnoses for which timely and effective outpatient care can help to reduce the risk of hospitalization by: (1) preventing the onset of an illness or condition, (2) controlling an acute episodic illness or condition, or (3) managing a chronic disease or condition. ACS conditions include chronic conditions such as asthma and diabetes, as well as acute conditions such as pneumonia.

Data Source: Hospital separation records for individuals between 20 and 64 years of age at the time of admission to hospital. ACS conditions are identified on the basis of the primary and secondary diagnoses indicated on hospital separation forms.
Covered population records maintained by the provincial ministry of health. The covered population is based on eligibility for health insurance benefits in Saskatchewan.

Rationale: Hospitalization rates for ACS conditions provide an indication of the availability, accessibility, and use of primary care by different segments of the adult population.

Cervical Cancer Screening

Definition: Percentage of women 20 to 64 years of age who have received at least one Pap test within a specified three-year time period.

Data Source: This data can be obtained from billing records for laboratory services.

Rationale: Screening with the Pap test can help to reduce the likelihood of developing cervical cancer. The Saskatchewan Health Services Utilization and Research Commission has endorsed guidelines on the frequency of screening for cancer of the cervix; these guidelines state that sexually active women aged 18 years of age and older should have a Pap test for two consecutive years initially, and then every three years until they reach 69 years of age.

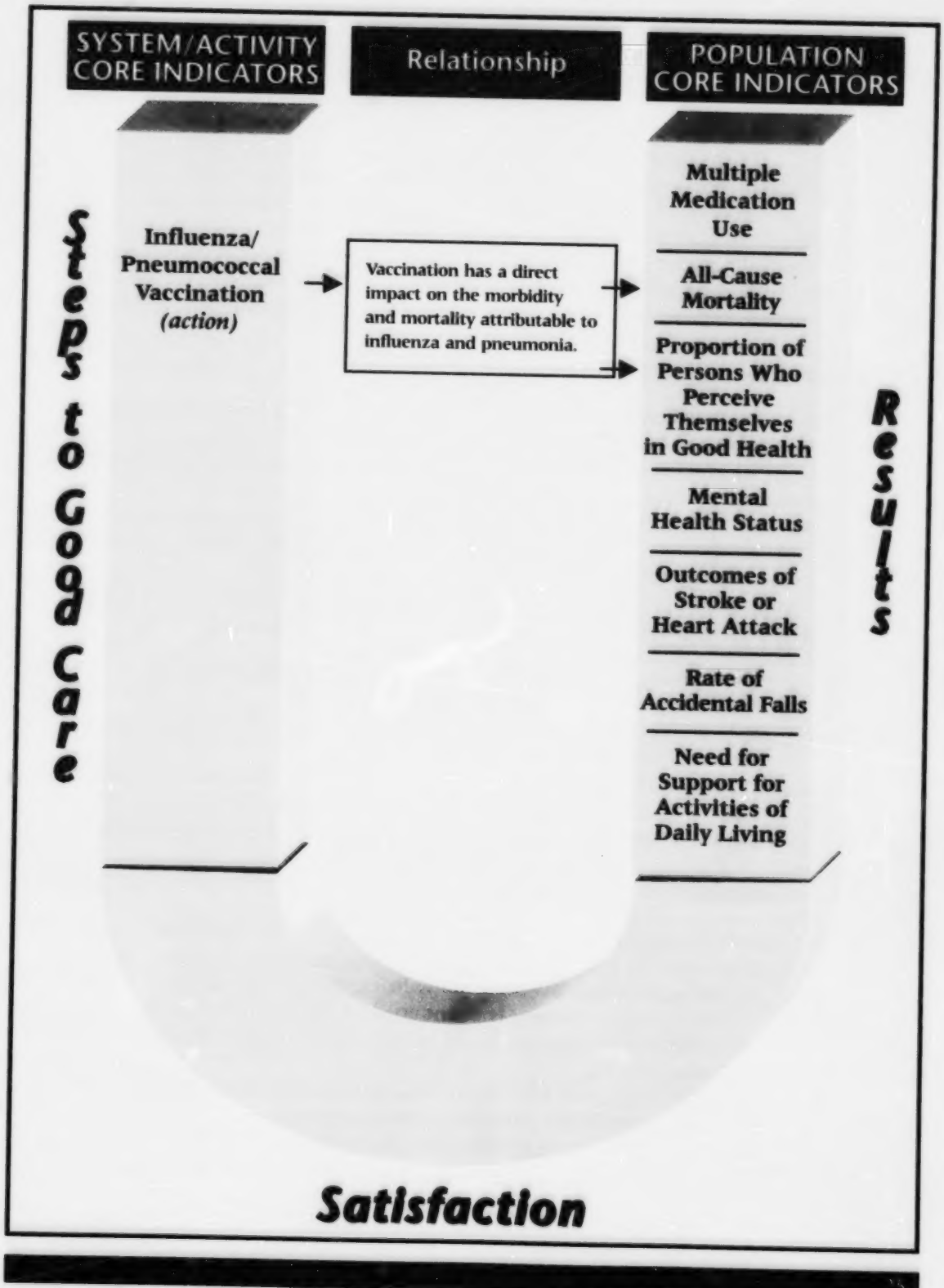
Need for Support for Activities of Daily Living

Definition: Percentage of individuals 20 to 64 years of age who require help with: heavy housework, transportation, grocery shopping, preparing meals, normal everyday housework, personal care (e.g. bathing, dressing, eating), and nursing care such as treatments or medicine use.

Data Source: Data on supportive care needs can be obtained from the Saskatchewan Population Health Status and Dynamics Survey.

Rationale: This indicator may be used to identify individuals who are at risk for a lack of assistance to carry out daily activities, and therefore may have an increased risk of institutionalization. This information may facilitate planning for supportive care services and resources.

Seniors
FRAMEWORK OVERVIEW


SYSTEM/ACTIVITY CORE INDICATORS
Relationship
POPULATION CORE INDICATORS
Steps to Good Care
Influenza/ Pneumococcal Vaccination (action)
Vaccination has a direct impact on the morbidity and mortality attributable to influenza and pneumonia.
Multiple Medication Use
All-Cause Mortality
Proportion of Persons Who Perceive Themselves in Good Health
Mental Health Status
Outcomes of Stroke or Heart Attack
Rate of Accidental Falls
Need for Support for Activities of Daily Living
Results
Satisfaction

Core Indicators

Rate of Accidental Falls

Definition: Number of falls resulting in hospital admission or emergency medical services (EMS) response for individuals 65 years of age and older, expressed as a rate per 1,000 individuals 65 years of age and older.

Data Source: Hospital separation records for individuals who are at least 65 years of age at the time of admission to hospital.
Covered population records maintained by the provincial ministry of health. The covered population is based on eligibility for health insurance benefits in Saskatchewan.

Rationale: Falls are the leading cause of injury among older persons, and the impact that falls have on the health of seniors tends to increase with advancing age. Falls are largely preventable, particularly if a multi-faceted strategy is adopted.

Influenza/Pneumococcal Vaccination

Definition: (A) Proportion of population 65 years of age or older that has received an annual influenza vaccination.
(B) Proportion of population 65 years of age or older that has ever received a pneumococcal vaccination.

Data Source: Surveillance records maintained by the provincial ministry of health.

Rationale: Vaccination is an important preventive measure that can be effective in reducing morbidity and mortality among older adults.

Proportion of Persons Who Perceive Themselves in Good Health

Definition: The proportion of population 65 years of age and older who report their health as good, very good, or excellent.

Data Source: Data on perceived health status can be obtained from the Saskatchewan Population Health Status and Dynamics Survey.

Rationale: Perception of health status is an overall indicator of actual health status. Perception of health status is linked to the presence of health problems, overall trends in mortality, use of health care services, and limitations on activities.

All-Cause Mortality

Definition: Number of deaths among individuals 65 years of age and older, expressed as a rate per 1,000 individuals 65 years of age and older.

Data Source: Death registrations maintained by the provincial vital statistics registry.
Covered population records maintained by the provincial ministry of health. The covered population is based on eligibility for health insurance benefits in Saskatchewan.

Rationale: Mortality rates are a reflection of the actual health status of a population. Mortality rates, when analyzed by cause of death, may indicate the need for health services, and may also reflect the effects of lifestyle and health behaviours on longevity of life. Mortality rates in the senior's population may be indicative of future health status and the need for health services in the adult population.

Need for Support for Activities of Daily Living

Definition: Proportion of individuals 65 years of age and older who require help with: heavy housework, transportation, grocery shopping, preparing meals, normal everyday housework, personal care (e.g. bathing, dressing, eating), and nursing care such as treatments or medicine use. These activities are generally divided into two broad categories: (1) instrumental activities of daily living, which are necessary for maintaining an independent residence (e.g. housework, grocery shopping, and (2) self-maintenance activities, which include personal care and nursing care.

Data Source: Data on supportive care needs can be obtained from the Saskatchewan Population Health Status and Dynamics Survey.

Rationale: This indicator may be used to identify individuals who are at risk for a lack of assistance to carry out daily activities, and therefore may have an increased risk of institutionalization. This information may also facilitate planning for supportive care services and resources.

Mental Health Status*

Definition: The definition for this indicator will be developed in the future. Possible facets of measurement include prevalence of stress or depression, or of chronic mental conditions.

Data Source: Data on stress and depression can be obtained from the Saskatchewan Population Health Status and Dynamics Survey.

Rationale: Mental health status is an important component of overall health status, and is closely linked to physical health status. Mental illness is disabling and has a significant impact on quality of life. Mental health reflects not just an absence of illness or suffering, but the capacity to respond and adapt to life challenges. The measurement of such personal traits as depression, anxiety, behavioural/emotional control, and work stress can be used to assess mental health status.

Multiple Medication Use

Definition: Number of individuals 65 years of age and older who report having used five or more different medications in the previous two days.

Data Source: Some data on multiple medication use can be obtained from the Saskatchewan Population Health Status and Dynamics Survey, as well as the Saskatchewan Client Information Profile form, which is completed for individuals who require the use of provincial home care services.

Rationale: Multiple medication use by seniors may be an indication of poor health status, a signal to physicians to examine their prescribing patterns, and/or cause for concern with respect to critical events such as falls.

Note: An asterisk (*) denotes an indicator that is currently under development.

Outcomes of Stroke or Heart Attack*

Definition: A definition for this indicator will be developed in the future.
Data Source: A data source for this indicator will be developed in the future.
Rationale: Stroke and heart attack tend to be associated with higher rates of mortality among individuals 65 years of age and older than among younger individuals, particularly in the first few hours following the event. Survival outcomes can be improved with appropriate medical care and rehabilitation services.

Optional Indicators

Prevalence of Disability, Handicap, or Chronic Condition

Definition: Proportion of individuals 65 years of age and older indicating the presence of a long-term disability, handicap, or chronic condition. Long-term conditions are those that have lasted, or are expected to last, at least six months.
Data Source: There is no single data source that provides comprehensive information on the presence of disabilities, handicaps, or chronic conditions in the senior's population. The Saskatchewan Population Health Status and Dynamics Survey contains some items which relate to the presence of disabilities or handicaps. Home care assessment tools, such as the Saskatchewan Client Information Profile form, are another source of information, but coverage of the senior's population is not comprehensive.
Rationale: The prevalence of disabilities, handicaps, or chronic conditions in the senior's population may provide an indication of the need for community-based supportive care services as well as institutional care. As well, it may provide an indication of the relative burden that such conditions may have on the informal care network available in a region.

Rate of Fractures

Definition: Number of hospital admissions among individuals 65 years of age or older for treatment of a fracture of the hip, wrist, ankle, or vertebrae, expressed as a rate per 1,000 individuals 65 years of age or older.
Data Source: Hospital separation records for individuals who are at least 65 years of age at the time of admission to hospital.
Covered population records maintained by the provincial ministry of health. The covered population is based on eligibility for health insurance benefits in Saskatchewan.
Rationale: Fractures of the hip, extremities, and vertebrae provide an indirect measure of dietary adequacy, exercise and physical fitness level, and the prevalence of osteoporosis among older adults.

Institutional Days following Palliative Designation*

Definition: A definition for this indicator will be developed in the future.
Data Source: A data source for this indicator will be developed in the future.
Rationale: This indicator can be used to examine variations in end-of-life health care practices. Institutional palliative care is generally provided to individuals and their families through hospitals or long-term care facilities.

***Note**: An asterisk (*) denotes an indicator that is currently under development.*

FUTURE PLANS

Some components of the Health Service and Outcome Indicators project are still in the development stages. Future plans include the following:

Selection of Community Health Indicators: The 1997 province-wide consultations conducted by the Information Needs Working Group on the Saskatchewan Framework for Health Service and Outcome Indicators resulted in the recommendation that a fifth population group be added to the Framework. Specifically, it was suggested that consideration be given to the development of indicators that provide a context for understanding, describing, and interpreting the global (overall) health of a community. These *community health indicators* encompass a wide variety of indicators, including (1) general health status measures, (2) process measures which provide information on how communities structure and organize themselves to become and stay healthy, and (3) health determinant indicators. A Delphi process is currently being developed to seek input from a variety of health professionals and health stakeholder groups on the selection of community health indicators. The purpose of this process will be to build consensus around the selection of a small set of community health indicators that health districts can influence either directly through the programs and services they deliver or in partnership with others.

Development of Optional Indicators: At present, the Health Service and Outcome Indicators project has been centred on the development of core indicators; optional indicators will be the focus of future work. The role of optional indicators as supplementary planning and decision-making tools for health districts needs to be explored, as does a strategy by which additions or deletions to the optional list are made.

Development of Satisfaction Indicators: The focus of the project has been on the development of indicators for the *Steps to Good Care* and *Results* dimensions of the Framework. The Framework also depicts *Satisfaction* as an important element of quality. Before work can proceed with the identification of standardized tools and techniques for the evaluation of satisfaction on a provincial basis, the following need to be clarified:

- *Purpose:* What objective(s) is (are) to be achieved by evaluating satisfaction?
- *Components of a Satisfaction Evaluation:* What exactly do we measure?

Development of Strategies and Processes:
In the future, strategies and processes will be developed:

- To ensure the continued availability of required indicator data;
- To review the continued relevance of the indicators selected for each population group;
- To examine the relationships among the indicators selected for a particular population group;
- For continuing research into the factors that contribute to a particular performance indicator result.

Appendix A

MEMBERSHIP OF THE HEALTH DISTRICT ADVISORY COMMITTEE INFORMATION NEEDS WORKING GROUP

Chair
Carol Klassen
Assistant Deputy Minister
Saskatchewan Health

Members

Alan Ruetz
Chief Executive Officer
Southwest Health District

Bruce Karras
Chairperson
North-East District Health Board

Stan Rice
Chief Executive Officer
Prince Albert Health District

Laurence (Laurie) Thompson
Chief Executive Officer
Health Services Utilization and Research Commission

Dr. Ross Findlater
Deputy Medical Health Officer
Regina Health District

Susan Wagner
External Representative
Former Board Member
Saskatoon District Health Board

Saskatchewan Health Participants

Dianne Koepke
District Management Services Branch

Pauline Rousseau
Acute and Emergency Services Branch

Dr. William Osei
Population Health Branch

Dr. Lisa Lix
Acute and Emergency Services Branch

Appendix B

FORMAT FOR REPORTING ON HEALTH SERVICE AND OUTCOME INDICATORS

For each indicator that is being developed under this project, the following information will be compiled:

Descriptive Information

Numeric analyses of the data associated with each indicator will be provided wherever this data is available. The data will be displayed for multiple years, so that changes in results across time can be assessed. The data will also be broken down by the dominant characteristics of the population, such as by age and sex. This may be useful for identifying segments of the population that may be targeted in the delivery of programs and services. For some indicators, such as those which depict mortality or hospitalization rates, it is usually possible to display the results by cause or type of event. This is important for understanding the relative impact of various conditions on the health of the population.

Technical Information

Technical information includes the following:

Rationale: Significance and utility of the indicator.

Definition: Formula used to calculate the indicator, and specifications of both the numerator and denominator of this formula; methodology used to derive the data; data source; comprehensiveness of coverage of the Saskatchewan population.

Statistical Methods: A brief summary of the methods used for describing the data.

Factors Affecting Indicator Quality: Gaps or weaknesses in the data that may influence the results obtained; issues related to reliability.

Interpretation: Context for understanding why the numeric value of an indicator may change over time and/or across regions of the province; impact that changes in the numeric value of an indicator may have on other dimensions of the health of a population; validity issues.

Potential for Action: Potential opportunities that exist for the health system and its partners to influence the numeric value of the indicator.

Value of the Indicator: The role that the indicator may play in understanding the implications of changes in the delivery of programs and services.

Relevant Provincial and District Initiatives: Section to be developed, as information on best practices in the health system is identified.

Further Reading: List of references.